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PALMER, C. T.—Artificial Persons: A Philosophical View of the Law of Corporations. Extract *Open Court*, 1888. From Dr. P. Carus.

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Report Arkansas Geol. Survey, 1888.

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ROTH, S.—Catalogue No. 5. Fossiles de la Pampa Amérique du Sud.-Avis.

SHUFELDT, R. W.—Remarks upon Extinct Mammals.

———. Observations upon the Osteology of the Orders Tubinares and Steganopodes. Ext. Proc. U. S. Nat. Mus., Vol. XI., 1889.—Osteological Studies of the Sub-Family Ardeinæ. Ext. *Journal Comp. Med. and Surg.*, 1889.

———. Observations upon the Osteology of the Larus and Grebes. Ext. *Journal Anat. and Phy.*, Vol. XXIV.

———. On the Position of Chamæa in the System. Reprint *Journal Morph.*, Vol. III., No. 3. From the author.

Sketch of the Laboratory of Biological Research of the Brooklyn Institute.

SMITH, C. L.—History of Education in North Carolina. Bureau of Ed., Cir. of Inf. No. 2, 1888.

STEFANESCU, G.—Mémoire Relatif à la Geologie du Judet del Doljin. Annarulă Biurouliu Geologică, 1882-'83, No. 4.

TAVEL, F. VON—Contributions to the History of the Development of Pyrenomycetes. Ext. *Journal Mycology*, 1889. From J. M. Rusk.

RECENT LITERATURE.

Eimer on Evolution.¹—This work reaches the scientific men of English-speaking countries at a time when the views of Weismann are being read, and it serves as a source of evidence on the opposite side of the interesting question which they discuss. Professor Eimer has taken a broader view of the field than is done by that large class of biologists whose knowledge is limited by the use of the microscope, and he is therefore in possession of a class of facts which are apt to

¹ Organic Evolution as the Result of the Inheritance of Acquired Characters, According to the Law of Organic Growth, by G. H. Theodor Eimer, Professor of Zoology and Comparative Anatomy at the University of Tübingen. Translated by I. H. Cunningham, M.A., F.R.S.E. London: MacMillan & Co., and New York, 1890. 8vo, pp. 435.

escape the researches of the histologists and embryologists. While using the many important and essential facts brought to light by the latter class of investigators, he has not neglected researches which do not require the mechanical appliances which give a somewhat factitious value to the pursuits of microscopy and telescropy. Prof. Eimer is already well known through his important investigations on the distribution and origin of color-markings in insects and reptiles; his discussion of the variations of the wall lizard of Europe (*Lacerta muralis*) being a model of this kind of work. From these and similar researches on the variations in the colors of caterpillars, and imagines of various Lepidoptera, he has shown conclusively that *color-variations are not promiscuous or fortuitous, but follow certain definite directions*. This result is in entire harmony with those derived from similar studies which I have made on the coloration of certain snakes, and of which I have published, especially the case of the North American *Ophibolus doliiatus*.² The author then proceeds to discuss the effects of physical agencies as causes of variations, as light, temperature, humidity, etc. Of the effects of use and disuse he says (p. 153): "It is a self-evident physiological fact that practice or use strengthens and improves the organs of the body, while disuse causes them to deteriorate." He then adds: "That characters acquired through use or disuse are inherited, and must therefore aid in the formation of new species, can be proved more easily than any of the propositions I am maintaining. If I were to bring together all the facts which could be used as evidence on this point, I should never come to the end of them, for I should have to refer to all the facts of anatomy and physiology. But I intend to show in particular that use and disuse by themselves must lead to the formation of new permanent characters, without the aid of selection, for even this I hold to be a physiological necessity." Accordingly, the author cites many facts in support of this view. Among these he relates some interesting cases of the inheritance of mutilations and abnormalities.

Considerable space is devoted to the question of the origin and transmission of mental characteristics, and here especially Prof. Eimer shows himself an acute observer and thinker. His residence has grounds attached to it, where he has been accustomed to have under his eye animals both domestic and wild, and his observations on the habits of these are highly interesting. He coincides in opinion with most observers on this subject, that mental habits are readily transmitted by inheritance, and his observations on young chickens and other birds are very instructive.

² Proceeds, U. S. National Museum, 1888, p. 381. Bulletin do., I. 1875, p. 3.

Prof. Eimer takes occasion frequently to criticise the opinions of Prof. Weismann. The following is a sample of this polemic :

"In the paper previously mentioned, 'Retrogression in Nature,' Weismann replies with greater detail and precision than on previous occasions to the objections which may be made—as they have been made by me—to his theory on account of the facts of the degeneration of organs in consequence of disuse.

"Starting from the proposition that 'the adaptation of living beings, in all their parts, depends on the process of natural selection,' he infers that this adaptation must be maintained by the same means by which it was produced, and that it must again disappear as soon as this means, natural selection, fails to act.

"In other words, he says : Through natural selection alone forms have come to be what they are. By the continuation of natural selection only are they maintained in their present state. If selection ceases, they of necessity retrograde. But selection with respect to a particular organ obviously ceases as soon as that organ is no longer necessary ('the reverse side of natural selection'); its cessation, therefore, produces the degeneration of organs.

"It is, according to my view, self-evident that the cessation of natural selection can as little cause the retrogression of an organ as natural selection can cause it to develop. Selection is, I must ever repeat, no physiological factor which could produce any thing new, or whose cessation could annul anything existing. Organs are produced by external stimuli, or by use acting upon the material given in a given case, with the aid of general and of sexual selection."

In this position the author is in entire harmony with the views of the Neo-Lamarckian school in America and England ; and he supports it with an array of facts which fill a great part of the 435 pages which comprise the volume. We regret that he has not been apparently acquainted with the opinions entertained by his co-workers on this side of the Atlantic, as he might have derived some facts of use to him. To paleontology, that mine of evidence for the evolutionist, he makes but little reference ; and, in fact, this subject has not been within the scope of his researches, which have been so abundant in other directions.

With respect to the cause of variations, he adduces the following example :

"Oscar Schmidt points out further that numerous [other] cases in sponges have been described by Haeckel and himself, in which the organisms are beginning to change into new species by the disappear-

ance of certain forms of skeletal structures. And I am able to add that in the markings of animals—*e.g.*, butterflies—characters everywhere degenerate whose present or former use cannot be discerned, which we must regard as non-essential.

"Weismann supposes that even in those cases in which adaptation is not demonstrated it is really present. But such an assumption belongs to the domain of faith.

"We ought, on the contrary, to say: We know that definite stimuli must produce an effect on or in the organism; that they must give rise to definite changes of form, definite character, whether these be useful to the organism or not.

"When we maintain this we take our stand, not on mere assumptions, but on physiological facts. Normal physiology and pathology in like measure speak for us with the weight of all their fundamental truths.

"Thus there is certainly a physiological basis for the belief that the above-described variations of the sponge-skeleton are simply to be ascribed to changes of external, *i.e.*, of nutritive conditions, of the material composition of the body."

The translator has performed an excellent service. We cannot but agree with him in some remarks in his preface as to the editorial conduct of the English periodical *Nature*. He complains of the exclusion of articles which do not coincide with the views of the editor of the department of Natural History. On this we observe that such exclusions, no doubt, often occur, but though it may not be commended as judicial, it is within editorial right. But mutilation or alteration of articles, as is sometimes practiced by that periodical, is clearly not within editorial right, and to this practice exception may be still more fairly taken.—*E. D. Cope*.

Geddes and Thompson on the Evolution of Sex.¹—In this book we have a systematic *résumé* of what is known on the subject of sex, with inferences which appear to the authors reasonably to flow from the facts. The work is divided into four "books," viz.: I. Male and Female; II. Analysis of Sex,—organs, tissues, cells; III. Processes of Reproduction; IV. Theory of Reproduction. The work done in this direction has been very large in the last few years, and the time was ripe for the presentation to the public of just such a work as the present. The subject is not only intrinsically interesting, but it has the closest relation to the general question of

¹ The Evolution of Sex. By Prof. Patrick Geddes and J. Arthur Thompson. 8vo, pp. 322. From the Contemporary Science Series. London: Walter Scott.